## Current practice for using some sea ice definitions at international ice centres, with reference to WMO Ice Nomenclature (definitions from WMO Sea Ice Nomenclature – WMO No. 259)

(http://www.aari.ru/gdsidb/XML/volume1.php?lang1=0&lang2=0&arrange=0&self=0 )

**2.1 New ice:** A general term for recently formed ice which includes *frazil ice*, *grease ice*, *slush* and *shuga*. These types of ice are composed of ice crystals which are only weakly frozen together (if at all) and have a definite form only while they are afloat.
**2.3 Pancake ice:** Predominantly circular pieces of ice from 30 cm - 3 m in diameter, and up to about 10 cm in thickness, with raised rims due to the pieces striking against one another. It may be formed on a slight swell from *grease ice*, *shuga* or *slush* or as a result of the breaking of *ice rind*, *nilas* or, under severe conditions of swell or waves, of *grey ice*. It also sometimes forms at some depth at an interface between water bodies of different physical characteristics, from where it floats to the surface; its appearance may rapidly cover wide areas of water.
**2.6 Old ice:** *Sea ice* which has survived at least one summer's melt; typical thickness up to 3m or more. Most topographic features are smoother than on *first-year ice*. May be subdivided into *second-year ice* and *multi-year ice*.
**2.6.1 Second-year ice:** *Old ice* which has survived only one summer's melt; typical thickness up to 2.5 m and sometimes more. Because it is thicker than *first-year ice*, it stands higher out of the water. In contrast to *multi-year ice*, summer melting produces a regular pattern of numerous small *puddles*. Bare patches and *puddles* prx usually greenish-blue.
**2.6.2 Multi-year ice:** *Old ice* up to 3 m or more thick which has survived at least two summers' melt. Hummocks even smoother than in *second-year ice*, and the ice is almost salt-free. Colour, where bare, is usually blue. Melt pattern consists of large interconnecting irregular *puddles* and a well-developed drainage system.
**2.6.x (proposal) Residual ice**: First-year ice that has survived the summer's melt and is now in the new cycle of growth. It is 30 to 180 cm thick depending on the region where it was in summer. After 1 January (in the Southern hemisphere after 1 July), this ice is called second-year ice.
**4.2.5Very open ice:** *Floating ice* in which the *concentration* is 1/10 to 3/10 and water preponderates over ice.
**4.2.6 Open water:** A large area of freely navigable water in which *sea ice* is present in *concentrations* less than 1/10. No *ice of land origin* is present.
**4.2.7 Bergy water:** An area of freely navigable water in which *ice of land origin* is present in *concentrations* less than 1/10. There may be *sea ice* present, although the total *concentration* of all ice shall not exceed 1/10.
**4.2.8 Ice-free:** No ice present. If ice of any kind is present this term should not be used.
**4.4.8 Ice edge:** The demarcation at any given time between the open sea and *sea ice* of any kind, whether fast or drifting. It may be termed *compacted* or *diffuse* (cf. *ice boundary*).
**4.4.1.4 Ice patch:** An area of *floating ice* less than 10 km across.
**4.4.3 Belt:** A large feature of *drift ice* arrangement; longer than it is wide; from 1 km to more than 100 km in width.
**4.4.4 Tongue:** A projection of the *ice edge* up to several kilometers in length, caused by wind or current.
**4.4.5 Strip:** Long narrow area of *floating ice*, about 1 km or less in width, usually composed of small fragments detached from the main mass of ice, and run together under the influence of wind, swell or current.
**9.1 Puddle:** An accumulation on ice of melt-water, mainly due to melting snow, but in the more advanced stages also to the melting of ice. Initial stage consists of patches of melted snow.

| **Country** | **SMHI** | **FMI** | **USA** | **Denmark** | **Canada** |
|---|---|---|---|---|---|
| Area | Baltic Sea | Baltic Sea | Global | Greenland, (East, South, West, North) | Canadian Arctic, Eastern Canadian Waters |
| **Parameter** | | | | | |
| Ice edge (4.4.8) | Conc. <1/10 | Conc. <1/10 | Conc. 1/10 in daily ice edge products, conc. 15% in models | Normally 1 tenth is defining the ice edge. Sometimes polygons with less than 1 tenth of ice. | Ice edges are drawn between open water or bergy water (less than 1 tenth) and ice of one tenth or more of ice. |
| Ice edge, additional information (4.4.8) | New ice, SST | New ice, SST | Demarcation between open sea and sea ice | Symbols on the ice chart in terms of bergy water, new ice few/many icebergs/growlers or belts of ice. | symbology to label open water, bergy water, ice belts and ice free areas |
| Old Ice (2.6) | Not relevant | Not relevant | At Oct 01 any FY ice is labelled SY ice (8*). At Jan 01 all SY and MY ice is labelled Old Ice (7*) | Sea ice which has survived one summers melt is after 01 October defined as Old Ice. | **On October 1:** First Year Ice (6,7,8,9,1.,4.) will become Second-Year (8.) Second-Year (8.) will become Multi-Year (9.) Old Ice (7.) will become Multi-Year (9.) **On January 1:** Second-Year (8.) will become Old Ice (7.) Multi-Year (9.) will become Old Ice (7.) |

| **Country** | **Russia** | **Argentina** |
|---|---|---|
| Area | Eurasian Arctic Seas, Arctic Basin, Antarctic | Antarctica |
| **Parameter** | | |
| Ice edge (4.4.8) | For the ice charts based on satellite imagery ice edges are drawn between ice free (4.2.8) and ice of 1-2 tenth (4.2.5) or more of ice. For the ice charts based on visual observations ice edges are drawn between ice free (4.2.6) and open water (4.2.8). | Boundary between open water (less than 1/10) and ice covered areas with 1/10 or more |
| Ice edge, additional information (4.4.8) | If present, new ice (2.1) or ice stripes (4.4.5) and patches (4.4.1.4) are demarcated outside of ice edge. For Antarctic region zones of pancake ice (2.3) of 50-100 km width occur in 90% of case and are demarcated in winter time. The same The same phenomenon for the Arctic region occurs and is demarcated in winter time in the Barents Sea. | None |
| Old Ice (2.6) | After the moment of stable ice formation (typical dates are regin-specific: 1st 10-days period in Kara Sea, November in Chukchi Sea) the FYI is called residual ice (2.6.x). The moment of ice formation is determined by melt puddles (9.1) freezing. From the January 1st the residual ice on the charts based on satellite imagery is called old ice (2.6); in case of visual observations – SYI ice (2.6.1). In general case, for the ice charts based on satellite imagery there is no distinction between SYI and MYI, the term old ice is used; for the case of visual observations gradations SYI (2.6.1) and MYI (2.6.2) are used. | Sea ice which has survived more than one summers melt is defined as old ice at March 01 |

Awaiting information from the following countries:

| **Country** | **Germany** | **Iceland** | **Chile** | **Australia** | **China** | **Norway** |
|---|---|---|---|---|---|---|
| Area | | | | | | |
| **Parameter** | | | | | | |
| Ice edge (4.4.8) | | | | | | |
| Ice edge, additional information (4.4.8) | | | | | | |
| Old Ice (2.6) | | | | | | |

| **Country** | **Japan** | **Poland** | **Latvia** | **Lithuania** | **Estonia** |
|---|---|---|---|---|---|
| Area | | | | | |
| **Parameter** | | | | | |
| Ice edge | | | | | |
| Ice edge, additional information | | | | | |
| Old Ice | | | | | |